

Taizhou dataset

The Taizhou Dataset mainly shows changes related to city expansion (Wu et al., 2013; Lyu et al., 2016). It consists of two images of size 400×400 pixels, collected from Landsat7 with a spatial resolution of 30m. The available manually annotated samples of this dataset for MCD cover four classes of interest, including unchanged area, city change, soil change, and water change. This dataset is available from:

<https://github.com/I-Hope-Peace/ChangeDetectionRepository/tree/master/Dataset/Landsat/Taizhou>

Nanjing dataset

The major changes in the Nanjing dataset occur due to complex city expansion as well as farmland changes, which is more complex and challenging (Du et al., 2019). It contains two images of size 800×800 pixels. The rest details about Nanjing dataset are provided in the above images. This dataset is available from:

<https://github.com/I-Hope-Peace/ChangeDetectionRepository/tree/master/Dataset/Landsat/Nanjing>

Mts-WH dataset

The Mts-WH dataset was created for the task of evaluating the performance of scene MCD (Wu et al., 2016). The multi-temporal images in Mts-WH dataset were collected by the IKONOS sensors at 2002 and 2009. The images size is 7200×6000 pixels with four bands, and the spatial resolution is 1m. The Mts-WH dataset is available from:

http://sigma.whu.edu.cn/newspage.php?q=2019_03_26

Yancheng dataset

This dataset includes hyperspectral EO-1 Hyperion bi-temporal images of two locations with 242 bands, taken in Yancheng, Jiangsu province, China (Song et al., 2018). The images have a spatial resolution of 30 m and size of 220×430 pixels. There are five main categories of land-cover changes, which are associated with changes in vegetation, bare soil and water, including the transitions between vegetation, bare soil and water. The Yancheng dataset is available from:

<https://github.com/SicongLiuRS/Hyperspectral-Change-Detection-Dataset-Wetland-Area>

USA dataset

The USA dataset contains the 2004 and 2007 bi-temporal hyperspectral image pairs acquired from the Hyperion sensor attached to the EO-1 satellite (Liu et al., 2019). The research area is irrigated farmland in Benton County, Oregon, USA, and is 180 × 225 pixels in size. There are six change classes, and the main land cover changes are the transitions between different types of crops, soils and other land cover types. The USA dataset is available from:

<https://github.com/SicongLiuRS/Hyperspectral-Change-Detection-Dataset-Irrigated-Agricultural-Area>

HRSCD dataset

The HRSCD dataset can be considered as the first large-scale dataset for MCD (Daudt et al., 2019). It consists of 291 co-registered RGB images pairs of 10000×10000 pixels, with five land cover classes and pixel-level change labels. And the image in this dataset all have the same resolution of 0.5m. The HRSCD dataset is available from:

<https://iee-dataport.org/open-access/hrscd-high-resolution-semantic-change-detection-dataset#files>

xBD dataset

The xBD dataset is a large-scale dataset that can be used for multi-class disaster building CD (Gupta et al., 2019). The complete xBD dataset includes 19 different kinds of post-disaster satellite images with a total of 22068 images which have 850736 buildings. The images in this dataset were acquired by WorldView-3 with a spatial resolution of 0.3m. Each image has a size of 1024× 1024 pixels. It includes four different types of change (i.e. four different levels of damage) to address the lack of a scale for building damage assessment. The xBD dataset is available from:

<https://xview2.org/dataset>

SECOND dataset

This benchmark dataset was created for MCD (Yang et al., 2021). The SECOND dataset includes images across various platforms and sensors, for a total of 4662 image pairs, and each image has a size of 512×512 pixels. The images in this dataset were collected mainly from Hangzhou, Chengdu, and Shanghai. This dataset has 6 major land cover classes and result in 30 common change classes, which are related to natural and anthropogenic geographical changes frequently. The SECOND dataset is available from:

<http://www.captain-whu.com/project/SCD/>

Table 1. Comparisons of the available benchmark MCD datasets

Dataset name	Change classes	Total image pairs	Image size	Data source	Resolution	Year	Application
Taizhou	3	1	400×400	Landsat7	30m	2000/2003	City expansion
Nanjing	3	1	800×800	Landsat7	30m	2000/2002	City expansion
Mts-WH	-	1	7200×6000	IKONOS	1m	2002/2009	Urban scene change
Yancheng	5	2	220×430	EO-1	30m	2005/2007	Vegetation change
USA	6	1	180×225	EO-1	30m	2004/2007	Farmland change
HRSCD	-	291	10000×10000	BDORTHODatabase	0.5m	2005/2006/2012	Land cover change
xBD	4	11034	1024×1024	WorldView-3	0.3m	-	Building damage assessment
SECOND	30	4662	512×512	Several platforms and sensors	0.5~3m	-	Land cover change